

**What is Claimed is:**

1. An arc discharge protection apparatus to prevent arc discharge from occurring in a high voltage output zone caused by abnormal conditions, the high voltage output zone including a power supply unit to provide power supply input, a control unit to provide voltage distribution signals, a driving unit to receive the power supply and the voltage distribution signals and transform voltage, a voltage boosting unit to receive the transformed voltage and transform to a high voltage and a load connecting to a high voltage output end of the voltage boosting unit, the arc discharge protection apparatus comprising:

an electrode plate for absorbing high voltage arc discharge signals released by the voltage boosting unit;

15 a voltage switch unit for receiving the high voltage arc discharge signals absorbed by the electrode plate and transforming to low voltage arc discharge signals;

a rectification unit for receiving and rectifying the low voltage arc discharge signals of the voltage switch unit and outputting an arc hybrid wave; and

20 a trigger unit for detecting the arc hybrid wave and outputting a trigger signal to stop operation of the control unit or the driving unit to prevent the arc discharge from occurring.

25 2. The arc discharge protection apparatus of claim 1, wherein

the electrode plate is a copper foil or a conductor having a property to absorb electric arc.

3. The arc discharge protection apparatus of claim 1, wherein the voltage switch unit includes a voltage switch circuit which  
5 consists of a cluster of impedance elements.

4. The arc discharge protection apparatus of claim 1, wherein the rectification unit includes a rectification circuit which consists of diodes and capacitors.

5. The arc discharge protection apparatus of claim 1, wherein  
10 the trigger unit is a silicon rectifier.

6. The arc discharge protection apparatus of claim 1, wherein the trigger unit is a flip-flop.

7. The arc discharge protection apparatus of claim 1, wherein the voltage boosting unit includes a transformer and a circuit  
15 board, the electrode plate being located on a location corresponding to the transformer.

8. The arc discharge protection apparatus of claim 1, wherein the voltage boosting unit includes a transformer and a circuit board, the electrode plate being located on a lead between the  
20 transformer and the circuit board.

9. The arc discharge protection apparatus of claim 1, wherein the voltage boosting unit includes a transformer and a circuit board, the electrode plate being located on a coupling location between the circuit board and the load.

25 10. The arc discharge protection apparatus of claim 7, wherein the

transformer is covered by a cap, the electrode plate being located on an inner wall of the cap.